

SEQUENCE LISTING

<110> Chiorini, John
Kotin, Robert M.
Safer, Brian
Davidson, Elizabeth
Zabner, Joseph

<120> AAV5 VECTOR FOR TRANSDUCING BRAIN CELLS AND LUNG CELLS

<130> 14014.0323U2

<160> 23

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 4652

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 1

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aacaaggtgg	ttgaatccgc	caaggccatc	ctgggggggt	caaaggtgcy	ggtcgatcag	1560
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atgtgtgtgg	tggtggatgg	gaattccacg	acctttgaac	accagcagcc	gctggaggac	1680

0323U2 "4652" DNA

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<210> 2

<211> 390

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =

synthetic construct

<400> 2
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 1 5 10 15
 Gln Trp Ile Gln Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr
 20 25 30
 Gly Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser
 50 55 60
 Val Pro Glu Asp Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met
 65 70 75 80
 Asn Gly Tyr Asp Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys
 85 90 95
 Gln Arg Ser Phe Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Lys Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val
 245 250 255
 Thr His Glu Phe Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala
 260 265 270
 Glu Lys Ser Leu Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr
 275 280 285
 Lys Ser Leu Glu Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro
 290 295 300
 Arg Ser Ser Asp Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn
 305 310 315 320
 Trp Asn Ser Arg Tyr Asp Cys Lys Cys Asp Tyr His Ala Gln Phe Asp
 325 330 335
 Asn Ile Ser Asn Lys Cys Asp Glu Cys Glu Tyr Leu Asn Arg Gly Lys
 340 345 350
 Asn Gly Cys Ile Cys His Asn Val Thr His Cys Gln Ile Cys His Gly
 355 360 365
 Ile Pro Pro Trp Glu Lys Glu Asn Leu Ser Asp Phe Gly Asp Phe Asp
 370 375 380
 Asp Ala Asn Lys Glu Gln
 385 390

<210> 3

<211> 610

<212> PRT

<213> Artificial Sequence

002220" 032427 005342560

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 3

Met	Ala	Thr	Phe	Tyr	Glu	Val	Ile	Val	Arg	Val	Pro	Phe	Asp	Val	Glu
1				5					10					15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asp	Trp	Val	Thr	Gly
			20					25						30	
Gln	Ile	Trp	Glu	Leu	Pro	Pro	Glu	Ser	Asp	Leu	Asn	Leu	Thr	Leu	Val
			35				40					45			
Glu	Gln	Pro	Gln	Leu	Thr	Val	Ala	Asp	Arg	Ile	Arg	Arg	Val	Phe	Leu
	50					55					60				
Tyr	Glu	Trp	Asn	Lys	Phe	Ser	Lys	Gln	Glu	Ser	Lys	Phe	Phe	Val	Gln
65					70					75				80	
Phe	Glu	Lys	Gly	Ser	Glu	Tyr	Phe	His	Leu	His	Thr	Leu	Val	Glu	Thr
				85					90					95	
Ser	Gly	Ile	Ser	Ser	Met	Val	Leu	Gly	Arg	Tyr	Val	Ser	Gln	Ile	Arg
			100					105						110	
Ala	Gln	Leu	Val	Lys	Val	Val	Phe	Gln	Gly	Ile	Glu	Pro	Gln	Ile	Asn
		115					120						125		
Asp	Trp	Val	Ala	Ile	Thr	Lys	Val	Lys	Lys	Gly	Gly	Ala	Asn	Lys	Val
	130					135					140				
Val	Asp	Ser	Gly	Tyr	Ile	Pro	Ala	Tyr	Leu	Leu	Pro	Lys	Val	Gln	Pro
145					150					155				160	
Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Leu	Asp	Glu	Tyr	Lys	Leu	Ala	Ala
				165					170					175	
Leu	Asn	Leu	Glu	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	Phe	Leu	Ala	Glu
			180					185					190		
Ser	Ser	Gln	Arg	Ser	Gln	Glu	Ala	Ala	Ser	Gln	Arg	Glu	Phe	Ser	Ala
		195				200						205			
Asp	Pro	Val	Ile	Lys	Ser	Lys	Thr	Ser	Gln	Lys	Tyr	Met	Ala	Leu	Val
	210					215					220				
Asn	Trp	Leu	Val	Glu	His	Gly	Ile	Thr	Ser	Glu	Lys	Gln	Trp	Ile	Gln
225					230					235				240	
Glu	Asn	Gln	Glu	Ser	Tyr	Leu	Ser	Phe	Asn	Ser	Thr	Gly	Asn	Ser	Arg
				245					250					255	
Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Thr	Lys	Ile	Met	Ser	Leu
			260					265					270		
Thr	Lys	Ser	Ala	Val	Asp	Tyr	Leu	Val	Gly	Ser	Ser	Val	Pro	Glu	Asp
		275					280						285		
Ile	Ser	Lys	Asn	Arg	Ile	Trp	Gln	Ile	Phe	Glu	Met	Asn	Gly	Tyr	Asp
	290					295					300				
Pro	Ala	Tyr	Ala	Gly	Ser	Ile	Leu	Tyr	Gly	Trp	Cys	Gln	Arg	Ser	Phe
305					310					315					320
Asn	Lys	Arg	Asn	Thr	Val	Trp	Leu	Tyr	Gly	Pro	Ala	Thr	Thr	Gly	Lys
				325					330					335	
Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	Phe	Tyr	Gly	Cys
			340					345					350		
Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	Cys	Val	Asp	Lys
		355					360					365			
Met	Leu	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Asn	Lys	Val	Val	Glu
	370					375					380				
Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	Val	Asp	Gln	Lys
385					390					395				400	
Cys	Lys	Ser	Ser	Val	Gln	Ile	Asp	Ser	Thr	Pro	Val	Ile	Val	Thr	Ser
				405					410					415	

002220 032220 09533427

Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser Thr Thr Phe Glu
 420 425 430

His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe Glu Leu Thr Lys
 435 440 445
 Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln Glu Val Lys Asp
 450 455 460
 Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val Thr His Glu Phe
 465 470 475 480
 Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala Glu Lys Ser Leu
 485 490 495
 Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr Lys Ser Leu Glu
 500 505 510
 Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro Arg Ser Ser Asp
 515 520 525
 Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn Trp Asn Ser Arg
 530 535 540
 Tyr Asp Cys Lys Cys Asp Tyr His Ala Gln Phe Asp Asn Ile Ser Asn
 545 550 555 560
 Lys Cys Asp Glu Cys Glu Tyr Leu Asn Arg Gly Lys Asn Gly Cys Ile
 565 570 575
 Cys His Asn Val Thr His Cys Gln Ile Cys His Gly Ile Pro Pro Trp
 580 585 590
 Glu Lys Glu Asn Leu Ser Asp Phe Gly Asp Phe Asp Asp Ala Asn Lys
 595 600 605
 Glu Gln
 610

<210> 4

<211> 724

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 4

Met Ser Phe Val Asp His Pro Pro Asp Trp Leu Glu Glu Val Gly Glu
 1 5 10 15
 Gly Leu Arg Glu Phe Leu Gly Leu Glu Ala Gly Pro Pro Lys Pro Lys
 20 25 30
 Pro Asn Gln Gln His Gln Asp Gln Ala Arg Gly Leu Val Leu Pro Gly
 35 40 45
 Tyr Asn Tyr Leu Gly Pro Gly Asn Gly Leu Asp Arg Gly Glu Pro Val
 50 55 60
 Asn Arg Ala Asp Glu Val Ala Arg Glu His Asp Ile Ser Tyr Asn Glu
 65 70 75 80
 Gln Leu Glu Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala Asp
 85 90 95
 Ala Glu Phe Gln Glu Lys Leu Ala Asp Thr Ser Phe Gly Gly Asn
 100 105 110
 Leu Gly Lys Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Phe
 115 120 125
 Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Thr Gly Lys Arg Ile
 130 135 140
 Asp Asp His Phe Pro Lys Arg Lys Lys Ala Arg Thr Glu Glu Asp Ser
 145 150 155 160

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Lys Pro Ser Thr Ser Ser Asp Ala Glu Ala Gly Pro Ser Gly Ser Gln
 165 170 175
 Gln Leu Gln Ile Pro Ala Gln Pro Ala Ser Ser Leu Gly Ala Asp Thr
 180 185 190
 Met Ser Ala Gly Gly Gly Gly Pro Leu Gly Asp Asn Asn Gln Gly Ala
 195 200 205
 Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys Asp Ser Thr Trp
 210 215 220
 Met Gly Asp Arg Val Val Thr Lys Ser Thr Arg Thr Trp Val Leu Pro
 225 230 235 240
 Ser Tyr Asn Asn His Gln Tyr Arg Glu Ile Lys Ser Gly Ser Val Asp
 245 250 255
 Gly Ser Asn Ala Asn Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr
 260 265 270
 Phe Asp Phe Asn Arg Phe His Ser His Trp Ser Pro Arg Asp Trp Gln
 275 280 285
 Arg Leu Ile Asn Asn Tyr Trp Gly Phe Arg Pro Arg Ser Leu Arg Val
 290 295 300
 Lys Ile Phe Asn Ile Gln Val Lys Glu Val Thr Val Gln Asp Ser Thr
 305 310 315 320
 Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp
 325 330 335
 Asp Asp Tyr Gln Leu Pro Tyr Val Val Gly Asn Gly Thr Glu Gly Cys
 340 345 350
 Leu Pro Ala Phe Pro Pro Gln Val Phe Thr Leu Pro Gln Tyr Gly Tyr
 355 360 365
 Ala Thr Leu Asn Arg Asp Asn Thr Glu Asn Pro Thr Glu Arg Ser Ser
 370 375 380
 Phe Phe Cys Leu Glu Tyr Phe Pro Ser Lys Met Leu Arg Thr Gly Asn
 385 390 395 400
 Asn Phe Glu Phe Thr Tyr Asn Phe Glu Glu Val Pro Phe His Ser Ser
 405 410 415
 Phe Ala Pro Ser Gln Asn Leu Phe Lys Leu Ala Asn Pro Leu Val Asp
 420 425 430
 Gln Tyr Leu Tyr Arg Phe Val Ser Thr Asn Asn Thr Gly Gly Val Gln
 435 440 445
 Phe Asn Lys Asn Leu Ala Gly Arg Tyr Ala Asn Thr Tyr Lys Asn Trp
 450 455 460
 Phe Pro Gly Pro Met Gly Arg Thr Gln Gly Trp Asn Leu Gly Ser Gly
 465 470 475 480
 Val Asn Arg Ala Ser Val Ser Ala Phe Ala Thr Thr Asn Arg Met Glu
 485 490 495
 Leu Glu Gly Ala Ser Tyr Gln Val Pro Pro Gln Pro Asn Gly Met Thr
 500 505 510
 Asn Asn Leu Gln Gly Ser Asn Thr Tyr Ala Leu Glu Asn Thr Met Ile
 515 520 525
 Phe Asn Ser Gln Pro Ala Asn Pro Gly Thr Thr Ala Thr Tyr Leu Glu
 530 535 540
 Gly Asn Met Leu Ile Thr Ser Glu Ser Glu Thr Gln Pro Val Asn Arg
 545 550 555 560
 Val Ala Tyr Asn Val Gly Gly Gln Met Ala Thr Asn Asn Gln Ser Ser
 565 570 575
 Thr Thr Ala Pro Ala Thr Gly Thr Tyr Asn Leu Gln Glu Ile Val Pro
 580 585 590
 Gly Ser Val Trp Met Glu Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
 595 600 605

002220" 034365

Ala Lys Ile Pro Glu Thr Gly Ala His Phe His Pro Ser Pro Ala Met
 610 615 620
 Gly Gly Phe Gly Leu Lys His Pro Pro Pro Met Met Leu Ile Lys Asn
 625 630 635 640
 Thr Pro Val Pro Gly Asn Ile Thr Ser Phe Ser Asp Val Pro Val Ser
 645 650 655
 Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Thr Val Glu Met Glu
 660 665 670
 Trp Glu Leu Lys Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln
 675 680 685
 Tyr Thr Asn Asn Tyr Asn Asp Pro Gln Phe Val Asp Phe Ala Pro Asp
 690 695 700
 Ser Thr Gly Glu Tyr Arg Thr Thr Arg Pro Ile Gly Thr Arg Tyr Leu
 705 710 715 720
 Thr Arg Pro Leu

<210> 5
 <211> 588
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 5
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 Lys Ala Arg Thr Glu Glu Asp Ser Lys Pro Ser Thr Ser Ser Asp Ala
 20 25 30
 Glu Ala Gly Pro Ser Gly Ser Gln Leu Gln Ile Pro Ala Gln Pro
 35 40 45
 Ala Ser Ser Leu Gly Ala Asp Thr Met Ser Ala Gly Gly Gly Gly Pro
 50 55 60
 Leu Gly Asp Asn Asn Gln Gly Ala Asp Gly Val Gly Asn Ala Ser Gly
 65 70 75 80
 Asp Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Val Thr Lys
 85 90 95
 Ser Thr Arg Thr Trp Val Leu Pro Ser Tyr Asn Asn His Gln Tyr Arg
 100 105 110
 Glu Ile Lys Ser Gly Ser Val Asp Gly Ser Asn Ala Asn Ala Tyr Phe
 115 120 125
 Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Ser
 130 135 140
 His Trp Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Tyr Trp Gly
 145 150 155 160
 Phe Arg Pro Arg Ser Leu Arg Val Lys Ile Phe Asn Ile Gln Val Lys
 165 170 175
 Glu Val Thr Val Gln Asp Ser Thr Thr Thr Ile Ala Asn Asn Leu Thr
 180 185 190
 Ser Thr Val Gln Val Phe Thr Asp Asp Tyr Gln Leu Pro Tyr Val
 195 200 205
 Val Gly Asn Gly Thr Glu Gly Cys Leu Pro Ala Phe Pro Pro Gln Val
 210 215 220
 Phe Thr Leu Pro Gln Tyr Gly Tyr Ala Thr Leu Asn Arg Asp Asn Thr
 225 230 235 240

002220 032242 095334

Glu	Glu	Val	Pro	Phe	His	Ser	Ser	Phe	Ala	Pro	Ser	Gln	Asn	Leu	Phe
		275					280					285			
Lys	Leu	Ala	Asn	Pro	Leu	Val	Asp	Gln	Tyr	Leu	Tyr	Arg	Phe	Val	Ser
	290					295					300				
Thr	Asn	Asn	Thr	Gly	Gly	Val	Gln	Phe	Asn	Lys	Asn	Leu	Ala	Gly	Arg
305					310					315					320
Tyr	Ala	Asn	Thr	Tyr	Lys	Asn	Trp	Phe	Pro	Gly	Pro	Met	Gly	Arg	Thr
				325					330					335	

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<210> 6
<211> 532
<212> PRT
<213> Artificial Sequence
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Met Ser Ala Gly Gly Gly Gly Pro Leu Gly Asp Asn Asn Gln Gly Ala
1 5 10 15

Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys Asp Ser Thr Trp
 20 25 30
 Met Gly Asp Arg Val Val Thr Lys Ser Thr Arg Thr Trp Val Leu Pro
 35 40 45

 Ser Tyr Asn Asn His Gln Tyr Arg Glu Ile Lys Ser Gly Ser Val Asp
 50 55 60
 Gly Ser Asn Ala Asn Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr
 65 70 75 80
 Phe Asp Phe Asn Arg Phe His Ser His Trp Ser Pro Arg Asp Trp Gln
 85 90 95
 Arg Leu Ile Asn Asn Tyr Trp Gly Phe Arg Pro Arg Ser Leu Arg Val
 100 105 110
 Lys Ile Phe Asn Ile Gln Val Lys Glu Val Thr Val Gln Asp Ser Thr
 115 120 125
 Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp
 130 135 140
 Asp Asp Tyr Gln Leu Pro Tyr Val Val Gly Asn Gly Thr Glu Gly Cys
 145 150 155 160
 Leu Pro Ala Phe Pro Pro Gln Val Phe Thr Leu Pro Gln Tyr Gly Tyr
 165 170 175
 Ala Thr Leu Asn Arg Asp Asn Thr Glu Asn Pro Thr Glu Arg Ser Ser
 180 185 190
 Phe Phe Cys Leu Glu Tyr Phe Pro Ser Lys Met Leu Arg Thr Gly Asn
 195 200 205
 Asn Phe Glu Phe Thr Tyr Asn Phe Glu Glu Val Pro Phe His Ser Ser
 210 215 220
 Phe Ala Pro Ser Gln Asn Leu Phe Lys Leu Ala Asn Pro Leu Val Asp
 225 230 235 240
 Gln Tyr Leu Tyr Arg Phe Val Ser Thr Asn Asn Thr Gly Gly Val Gln
 245 250 255
 Phe Asn Lys Asn Leu Ala Gly Arg Tyr Ala Asn Thr Tyr Lys Asn Trp
 260 265 270
 Phe Pro Gly Pro Met Gly Arg Thr Gln Gly Trp Asn Leu Gly Ser Gly
 275 280 285
 Val Asn Arg Ala Ser Val Ser Ala Phe Ala Thr Thr Asn Arg Met Glu
 290 295 300
 Leu Glu Gly Ala Ser Tyr Gln Val Pro Pro Gln Pro Asn Gly Met Thr
 305 310 315 320
 Asn Asn Leu Gln Gly Ser Asn Thr Tyr Ala Leu Glu Asn Thr Met Ile
 325 330 335
 Phe Asn Ser Gln Pro Ala Asn Pro Gly Thr Thr Ala Thr Tyr Leu Glu
 340 345 350
 Gly Asn Met Leu Ile Thr Ser Glu Ser Glu Thr Gln Pro Val Asn Arg
 355 360 365
 Val Ala Tyr Asn Val Gly Gly Gln Met Ala Thr Asn Asn Gln Ser Ser
 370 375 380
 Thr Thr Ala Pro Ala Thr Gly Thr Tyr Asn Leu Gln Glu Ile Val Pro
 385 390 395 400
 Gly Ser Val Trp Met Glu Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
 405 410 415
 Ala Lys Ile Pro Glu Thr Gly Ala His Phe His Pro Ser Pro Ala Met
 420 425 430
 Gly Gly Phe Gly Leu Lys His Pro Pro Met Met Leu Ile Lys Asn
 435 440 445
 Thr Pro Val Pro Gly Asn Ile Thr Ser Phe Ser Asp Val Pro Val Ser
 450 455 460

002220" 0344560

Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Thr Val Glu Met Glu
 465 470 475 480
 Trp Glu Leu Lys Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln
 485 490 495
 Tyr Thr Asn Asn Tyr Asn Asp Pro Gln Phe Val Asp Phe Ala Pro Asp
 500 505 510
 Ser Thr Gly Glu Tyr Arg Thr Thr Arg Pro Ile Gly Thr Arg Tyr Leu
 515 520 525
 Thr Arg Pro Leu
 530

<210> 7

<211> 2307

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 7

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ctgcgaccgc	tcaattggaa	ttcaagtaaa	taaagcgagt	agtcagtgtc	tttgttgatc	120
acctccaga	ttggttggaa	gaagtgggtg	aaggtcttcg	cgagtttttg	ggccttgaag	180
cgggccacc	gaaacaaaa	cccaatcagc	agcatcaaga	tcaagcccgt	ggtcttgtgc	240
tgcttggtta	taactatctc	ggacccggaa	acggtctcga	tcgaggagag	cctgtcaaca	300
gggcagacga	ggtcgcgcga	gagcacgaca	tctcgtacaa	cgagcagctt	gaggcgggag	360
acaaccccta	cctcaagtac	aaccacgcgg	acgccgagtt	tcaggagaag	ctcgccgacg	420
acacatectt	cgggggaaac	ctcggaaagg	cagtctttca	ggccaagaaa	agggttctcg	480
aaccttttgg	cctggttgaa	gaggggtgcta	agacggcccc	taccggaaag	cggatagacg	540
accactttcc	aaaaagaaa	aaggctcgga	ccgaagagga	ctccaagcct	tccacctcgt	600
cagacgccga	agctggaccc	agcggatccc	agcagctgca	aatcccagcc	caaccagcct	660
caagtttggg	agctgataca	atgtctgcgg	gaggtggcgg	cccattgggc	gacaataacc	720
aaggtgccga	tggagtgggc	aatgcctcgg	gagattggca	ttgcgattcc	acgtggatgg	780
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acagcacccc	ctgggggtac	tttgacttta	accgcttcca	cagccactgg	agcccccgag	960
actggcaaa	actcatcaac	aactactggg	gcttcagacc	ccggteccctc	agagtcaaaa	1020
tcttcaacat	tcaagtcaaa	gaggtcacgg	tgcaggactc	caccaccacc	atcgccaaca	1080
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acctccagga	aatcgtgccc	ggcagcgtgt	ggatggagag	ggacgtgtac	ctccaaggac	1920
ccatctgggc	caagatccca	gagacggggg	cgcactttca	cccctctccg	gccatggg	1980
gattcggact	caaacaccca	cggcccatga	tgctcatcaa	gaacacgcct	gtgcccggaa	2040
atatcaccag	cttctcggac	gtgcccgtca	gcagcttcat	caccaggtac	agcaccgggc	2100
aggtcaccgt	ggagatggag	tgggagctca	agaaggaaaa	ctccaagagg	tggaaaccag	2160
agatccagta	cacaaacaac	tacaacgacc	cccagtttgt	ggactttgcc	ccggacagca	2220

002220 "032200" 0953427

ccggggaata cagaaccacc agacctatcg gaacccgata ccttaccgga cccctttaac
ccattcatgt cgcataccct caataaa

2280
2307

<210> 8
<211> 2264
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 8
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gtttttgggc cttgaagcgg gccaccgaa accaaaaccc aatcagcagc atcaagatca 180
agcccgtggt cttgtgctgc ctggttataa ctatctcgga cccggaaacg gtctcgatcg 240
aggagagcct gtcaacaggg cagacgaggt cgcgcgagag cacgacatct cgtacaacga 300
gcagcttgag gcgggagaca acccctacct caagtacaac cacgcggacg ccgagtttca 360
ggagaagctc gccgacgaca catccttcgg gggaaacctc ggaaaggcag tctttcaggc 420
caagaaaagg gttctcgaac cttttggcct ggttgaagag ggtgctaaga cggcccctac 480
cggaaagcgg atagacgacc actttccaaa aagaaagaag gtcgggaccg aagaggactc 540
caagccttcc acctcgtcag acgccgaagc tggaccacgc ggatcccagc agctgcaaat 600
cccagcccaa ccagcctcaa gtgtgggagc tgatacaatg tctgcgggag gtggcgggcc 660
attgggagc aataaccaag gtgccgatgg agtgggcaat gcctcgggag attggcattg 720
cgattccacg tggatggggg acagagtcgt caccaagtcc acccgaaact ggggtgctgc 780
cagctacaac aaccaccagt accgagagat caaaagcggc tccgtcgacg gaagcaacgc 840
caacgcctac tttggataca gcacccctg ggggtacttt gactttaacc gcttccacag 900
ccactggagc ccccgagact ggcaaagact catcaacaac tactggggct tcagaccccg 960
gtccctcaga gtcaaaatct tcaacattca agtcaaagag gtcacggtgc aggactccac 1020
caccaccatc gccaaacaacc tcacctccac cgtccaagtg tttacggacg acgactacca 1080
gctgccctac gtcgtcggca acgggaccga gggatgcctg cgggccttcc ctccgcaggt 1140
ctttacgctg ccgcagtagc gttacgcgac gctgaaccgc gacaacacag aaaatcccac 1200
cgagaggagc agcttcttct gcctagagta ctttccagc aagatgctga gaacgggcaa 1260
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gagttaccag gtgccccgc agccgaacgg catgaccaac aacctccagg gcagcaacac 1620
ctatgccctg gagaacacta tgatcttcaa cagccagccg gcgaacccgg gcaccaccgc 1680
cacgtacctc gagggcaaca tgctcatcac cagcgagagc gagacgcagc cgggtgaaccg 1740
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cgcgaccggc acgtacaacc tccaggaaat cgtgcccggc agcgtgtgga tggagaggga 1860
cgtgtacctc caaggacca tctgggcca gatcccagag acggggggcg actttcacc 1920
ctctccggcc atgggcggat tcggactcaa acaccaccg cccatgatgc tcatcaagaa 1980
cacgcctgtg cccggaaata tcaccagctt ctcgacgtg cccgtcagca gcttcatcac 2040
ccagtacagc accgggcagg tcaccgtgga gatggagtgg gagctcaaga aggaaaactc 2100
caagaggtgg aaccagaga tccagtacac aaacaactac aacgaccccc agtttgtgga 2160
ctttgccccg gacagcaccg ggggaatacag aaccaccaga cctatcgga cccgatacct 2220
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<210> 9
<211> 2264
<212> DNA
<213> Artificial Sequence

<220>

002220" 032200

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 9

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ctgcgaccgc	tcaattggaa	ttcaagattg	gttgggaagaa	gttgggtgaag	gtcttcgcga	120
gtttttgggc	cttgaagcgg	gccaccgaa	accaaaaccc	aatcagcagc	atcaagatca	180
agcccggtgt	cttgtgtctgc	ctgggtataa	ctatctcgga	cccggaaacg	gtctcgatcg	240
aggagagcct	gtcaacaggg	cagacgaggt	cgcgcgagag	cacgacatct	cgtacaacga	300
gcagcttgag	gcgggagaca	acccctacct	caagtacaac	cacgcggacg	ccgagtttca	360
ggagaagctc	gccgacgaca	catccttcgg	gggaaacctc	ggaaaggcag	tctttcaggc	420
caagaaaagg	gttctcgaac	cttttgacct	ggttgaagag	gggtgctaaga	cggccctac	480
cggaaagcgg	atagacgacc	actttccaaa	aagaaagaag	gctcggaccg	aagaggactc	540
caagccttcc	acctcgtcag	acgcggaagc	tggaccacgc	ggatcccagc	agctgcaaat	600
cccagcccaa	ccagcctcaa	gtttgggagc	tgatacaatg	tctgcgggag	gtggcgggccc	660
attgggcgac	aataaccaag	gtgccgatgg	agtgggcaat	gcctcgggag	attggcattg	720
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caacgcctac	tttgatata	gcacccccctg	gggggtacttt	gactttaacc	gcttccacag	900
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gtccctcaga	gtcaaaatct	tcaacattca	agtcaaaagag	gtcacgggtgc	aggactccac	1020
caccaccatc	gccacaaccc	tcacctccac	cggtccaaagt	tttacggacg	acgactacca	1080
gctgccctac	gtcgtcgcca	acgggaccga	gggatgcctg	ccggccttcc	ctccgcaggt	1140
ctttacgctg	ccgcagtcag	gttacgcgac	gctgaaccgc	gacaacacag	aaaatcccac	1200
cgagaggagc	agcttcttct	gcctagagta	ctttcccagc	aagatgctga	gaacgggcaa	1260
caactttgag	tttacctaca	actttgagga	gggtgcccttc	cactccagct	tcgctcccag	1320
tcagaacctg	ttcaagctgg	ccaacccgct	gggtggaccag	tacttgtacc	gcttcgtgag	1380
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ggtcaaccgc	gccagtgtca	gcgccttcgc	cacgaccaat	aggatggagc	tcgagggcgc	1560
gagttaccag	gtgccccgcg	agccgaacgg	catgaccaac	aacctccagg	gcagcaacac	1620
ctatgccctg	gagaacacta	tgatcttcaa	cagccagccg	gcgaacccgg	gcaccaccgc	1680
cacgtacctc	gagggcaaca	tgctcatcac	cagcgagagc	gagacgcagc	cgggtgaaccg	1740
cgtggcgtag	aacgtcggcg	ggcagatggc	caccaacaac	cagagctcca	ccactgcccc	1800
cgcgaccggc	acgtacaacc	tccaggaaat	cgtgcccggc	agcgtgtgga	tggagagggga	1860
cgtgtacctc	caaggaccca	tctgggcca	gatcccagag	acggggggcgc	actttcacc	1920
ctctccggcc	atgggaggat	tccgactcaa	acacccaccg	cccattgatgc	tcattcaagaa	1980
cacgcctgtg	cccggaaata	tcaccagctt	ctcggacgtg	cccgctcagca	gcttcatcac	2040
ccagtacagc	accgggcagg	tcaccgtgga	gatggagtgg	gagctcaaga	aggaaaactc	2100
caagaggtgg	aaccagaga	tccagtacac	aaacaactac	aacgaccccc	agtttggtgga	2160
ctttgccccg	gacagcaccg	gggaatacag	aaccaccaga	cctatcgga	cccgatacct	2220
taccgaccc	ctttaacca	ttcatgtcgc	ataccctcaa	taaa		2264

<210> 10

<211> 1292

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 10

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cttcgcagcg	tgagttctcg	gctgaccggg	tcatcaaaag	caagacttcc	cagaaataca	120
tggcgctcgt	caactggctc	gtggagcagc	gcatacttc	cgagaagcag	tggatccagg	180
aaaatcagga	gagctacctc	tccttcaact	ccaccggcaa	ctctcggagc	cagatcaagg	240
ccgcgctcga	caacgcgacc	aaaattatga	gtctgacaaa	aagcgcggtg	gactacctcg	300

tggggagctc	cgttccccgag	gacattttcaa	aaaacagaat	ctggcacaatt	tttgagatga	360
atgggtacga	cccggcctac	gcgggatcca	tcctctacgg	ctgggtgtcag	cgctccttca	420
acaagaggaa	caccgtctgg	ctctacggac	ccgccacgac	cggcaagacc	aacatcgcgg	480
aggccatcgc	ccacactgtg	cccttttacg	gctgcgtgaa	ctggaccaat	gaaaactttc	540
cctttaatga	ctgtgtggac	aaaatgctca	tttggtggga	ggagggaag	atgaccaaca	600
aggtggttga	atccgccaaag	gccatcctgg	ggggctcaaa	ggtgcgggtc	gatcagaaat	660
gtaaatcctc	tgttcaaatt	gattctaccc	ctgtcattgt	aacttccaat	acaaacatgt	720
gtgtggtggt	ggatgggaat	tccacgacct	ttgaacacca	gcagccgctg	gaggaccgca	780
tgttcaaatt	tgaactgact	aagcggctcc	cgccagattt	tggcaagatt	actaagcagg	840
aagtcaagga	cttttttgc	tgggcaagg	tcaatcaggt	gccgggtgact	cacgagtta	900
aagttcccag	ggaattggcg	ggaactaaag	gggaggagaa	atctctaaaa	cgcccactgg	960
gtgacgtcac	caatactagc	tataaaagtc	tggagaagcg	ggccaggctc	tcatttggtc	1020
ccgagacgcc	tcgcagttca	gacgtgactg	ttgatccgcg	tcctctgcga	ccgctcaatt	1080
ggaattcaag	gtatgattgc	aaatgtgact	atcatgctca	atttgacaac	atttctaaca	1140
aatgtgatga	atgtgaatat	ttgaatcggg	gcaaaaatgg	atgtatctgt	cacaatgtaa	1200
ctcactgtca	aatttgtcat	gggattcccc	cctgggaaaa	ggaaaacttg	tcagattttg	1260
gggattttga	cgatgccaat	aaagaacagt	aa			1292

<210> 11

<211> 1870

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 11

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tgttcgcgct	ccatttgacg	tggaggaaca	tctgcctgga	atttctgaca	gctttgtgga	120
ctgggtaact	ggtcaaattt	gggagctgcc	tccagagtca	gatttaaatt	tgactctggg	180
tgaacagcct	cagttgacgg	tggctgatag	aattcgccgc	gtgttcctgt	acgagtggaa	240
caaattttcc	aagcaggagt	ccaaattctt	tgtgcagttt	gaaaagggat	ctgaatat	300
tcactctgcac	acgcttgtgg	agacctccgg	catctcttcc	atggctctcg	gccgctacgt	360
gagtcagatt	cgcgcccagc	tggtgaaagt	ggctctccag	ggaattgaac	cccagatcaa	420
cgactgggtc	gccatcacca	aggtaaagaa	gggaggagcc	aataaggtgg	tggattctgg	480
gtatattccc	gcctacctgc	tgccgaagg	ccaaccggag	cttcagtggg	cgtggacaaa	540
cctggacgag	tataaattgg	ccgccctgaa	tctggaggag	cgcaaacggc	tcgtcgcgca	600
gtttctggca	gaatcctcgc	agcgtctcga	ggaggcggct	tcgcagcgtg	agttctcggc	660
tgaccgggtc	atcaaaagca	agacttcccc	gaaatacatg	gcgctcgtca	actggctcgt	720
ggagcacggc	atcacttccg	agaagcagtg	gatccaggaa	aatcaggaga	gctacctctc	780
cttcaactcc	accggcaact	ctcggagcca	gatcaaggcc	gcgctcgaca	acgcgaccaa	840
aattatgagt	ctgacaaaaa	gcgcgggtga	ctacctcgct	gggagctccg	ttcccaggga	900
catttcaaaa	aacagaatct	ggcaaat	tgagatgaat	ggctacgacc	cggcctacgc	960
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cttttacggc	tgcgtgaact	ggaccaatga	aaactttccc	tttaatgact	gtgtggacaa	1140
aatgtctatt	tgggtgggag	agggaaagat	gaccaacaag	gtggttgaat	ccgccaaggc	1200
catcctgggg	ggctcaaagg	tgcgggtcga	tcagaaatgt	aaatcctctg	ttcaaattga	1260
ttctacccct	gtcattgtaa	cttccaatac	aaacatgtgt	gtggtggtgg	atgggaattc	1320
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ggcaaagggtc	aatcagggtgc	cggtgactca	cgagttttaa	gttcccaggg	aattggcggg	1500
aactaaagggt	gcggagaaat	ctctaaaacg	cccactgggt	gacgtcacca	atactagcta	1560
taaaagtctg	gagaagcggg	ccaggctctc	atttggtccc	gagacgcctc	gcagttcaga	1620
cgtgactggt	gatcccgtct	ctctgcgacc	gctcaattgg	aattcaagg	atgattgcaa	1680
atgtgactat	catgtctaat	ttgacaacat	ttctaacaaa	tgtgatgaat	gtgaatat	1740
gaatcggggc	aaaaatggat	gtatctgtca	caatgttaact	cactgtcaaa	tttgtcatgg	1800

002222 "032200

gattcccccc tgggaaaagg aaaacttgtc agattttggg gattttgacg atgccaataa
agaacagtaa

1860
1870

<210> 12
<211> 330
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 12
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Gln Trp Ile Gln Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr
20 25 30
Gly Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys
35 40 45
Ile Met Ser Leu Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser
50 55 60
Val Pro Glu Asp Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met
65 70 75 80
Asn Gly Tyr Asp Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys
85 90 95
Gln Arg Ser Phe Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala
100 105 110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115 120 125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130 135 140
Cys Val Asp Lys Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn
145 150 155 160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175
Val Asp Gln Lys Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val
180 185 190
Ile Val Thr Ser Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser
195 200 205
Thr Thr Phe Glu His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe
210 215 220
Glu Leu Thr Lys Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln
225 230 235 240
Glu Val Lys Asp Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val
245 250 255
Thr His Glu Phe Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala
260 265 270
Glu Lys Ser Leu Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr
275 280 285
Lys Ser Leu Glu Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro
290 295 300
Arg Ser Ser Asp Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn
305 310 315 320
Trp Asn Ser Arg Leu Val Gly Arg Ser Trp
325 330

<210> 13
<211> 1115

00533427 032200

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 13

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cggcttc	gc	gcgtg	agttc	tcggctg	acc	cggtc	atcaa	aagcaag	act	ttccaga	aat	120	
acatggc	gct	cgtca	actgg	ctcgtg	gagc	acggc	atcac	ttccaga	aag	cagtgg	atcc	180	
aggaaa	atca	ggagag	ctac	ctctc	ttca	actcc	accgg	caact	ctcgg	agccag	atca	240	
aggccgc	gct	cgaca	acgcg	accaa	aatta	tgagt	ctgac	aaaaa	gcgcg	gtggac	tacc	300	
tcgtggg	gag	ctcgt	ttccc	gaggac	at	caaaaa	acag	aatct	ggcaa	at	ttttg	360	
tgaatgg	cta	cgacc	cgcc	tacgc	gggat	ccatc	ctcta	cggct	gggtg	cagcg	ctc	420	
tcaaca	agag	gaacac	cgtc	tggtc	ctacg	gaccc	gccac	gaccg	gcaag	accaac	atcg	480	
cggagg	ccat	cgccc	acact	gtgcc	ctttt	acggc	tg	cg	tg	cg	tg	540	
ttccct	ttta	tgact	gtgtg	gacaa	aatgc	tcatt	tgg	tg	gg	agg	agg	600	
acaagg	tgg	tgaat	ccgcc	aagg	ccatcc	tggg	ggg	g	ctc	aaagg	tg	660	
aatgta	aatc	ctctg	ttcaa	attg	attcta	ccc	ctg	tc	tg	ta	act	720	
tgtgtg	tgg	ggtg	gatggg	aatt	ccacga	c	cttt	ga	aca	ccag	cag	780	
gcatgt	tcaa	attt	gaactg	acta	agcggc	tcc	cgcc	aga	tttt	gg	caag	840	
aggaag	tcaa	ggact	ttttt	gctt	gggcaa	agg	tca	atca	ggtg	ccg	gtg	900	
ttaaag	ttcc	caggg	aattg	gcg	ggaacta	aagg	ggc	gga	gaa	atc	tcta	960	
tgggtg	acgt	cacca	atact	agct	ataaaa	gtctg	gagaa	gcggg	ccag	gtct	cattg	1020	
ttccc	gagac	gcctc	gcag	t	cagac	gtga	ctgt	t	gatcc	cgct	cctctg	1080	
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<210> 14

<211> 550

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 14

Met	Ala	Thr	Phe	Tyr	Glu	Val	Ile	Val	Arg	Val	Pro	Phe	Asp	Val	Glu
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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asp	Trp	Val	Thr	Gly
		20						25					30		
Gln	Ile	Trp	Glu	Leu	Pro	Pro	Glu	Ser	Asp	Leu	Asn	Leu	Thr	Leu	Val
		35					40					45			
Glu	Gln	Pro	Gln	Leu	Thr	Val	Ala	Asp	Arg	Ile	Arg	Arg	Val	Phe	Leu
		50				55					60				
Tyr	Glu	Trp	Asn	Lys	Phe	Ser	Lys	Gln	Glu	Ser	Lys	Phe	Phe	Val	Gln
65					70					75				80	
Phe	Glu	Lys	Gly	Ser	Glu	Tyr	Phe	His	Leu	His	Thr	Leu	Val	Glu	Thr
				85					90					95	
Ser	Gly	Ile	Ser	Ser	Met	Val	Leu	Gly	Arg	Tyr	Val	Ser	Gln	Ile	Arg
			100					105					110		
Ala	Gln	Leu	Val	Lys	Val	Val	Phe	Gln	Gly	Ile	Glu	Pro	Gln	Ile	Asn
		115					120					125			
Asp	Trp	Val	Ala	Ile	Thr	Lys	Val	Lys	Lys	Gly	Gly	Ala	Asn	Lys	Val
		130				135					140				
Val	Asp	Ser	Gly	Tyr	Ile	Pro	Ala	Tyr	Leu	Leu	Pro	Lys	Val	Gln	Pro
145					150				155					160	

002220" 0322200

Glu Leu Gln Trp Ala Trp Thr Asn Leu Asp Glu Tyr Lys Leu Ala Ala
 165 170 175
 Leu Asn Leu Glu Glu Arg Lys Arg Leu Val Ala Gln Phe Leu Ala Glu
 180 185 190
 Ser Ser Gln Arg Ser Gln Glu Ala Ala Ser Gln Arg Glu Phe Ser Ala
 195 200 205

 Asp Pro Val Ile Lys Ser Lys Thr Ser Gln Lys Tyr Met Ala Leu Val
 210 215 220
 Asn Trp Leu Val Glu His Gly Ile Thr Ser Glu Lys Gln Trp Ile Gln
 225 230 235 240
 Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr Gly Asn Ser Arg
 245 250 255
 Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys Ile Met Ser Leu
 260 265 270
 Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser Val Pro Glu Asp
 275 280 285
 Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met Asn Gly Tyr Asp
 290 295 300
 Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys Gln Arg Ser Phe
 305 310 315 320
 Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala Thr Thr Gly Lys
 325 330 335
 Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro Phe Tyr Gly Cys
 340 345 350
 Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp Cys Val Asp Lys
 355 360 365
 Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn Lys Val Val Glu
 370 375 380
 Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg Val Asp Gln Lys
 385 390 395 400
 Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val Ile Val Thr Ser
 405 410 415
 Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser Thr Thr Phe Glu
 420 425 430
 His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe Glu Leu Thr Lys
 435 440 445
 Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln Glu Val Lys Asp
 450 455 460
 Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val Thr His Glu Phe
 465 470 475 480
 Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala Glu Lys Ser Leu
 485 490 495
 Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr Lys Ser Leu Glu
 500 505 510
 Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro Arg Ser Ser Asp
 515 520 525
 Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn Trp Asn Ser Arg
 530 535 540
 Leu Val Gly Arg Ser Trp
 545 550

<210> 15

<211> 1690

<212> DNA

<213> Artificial Sequence

<220>

002220" 24E560

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 15
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ctgggtaact ggtcaaattt gggagctgcc tccagagtca gatttaaatt tgactctggt 180
tgaacagcct cagttgacgg tggctgatag aattcgccgc gtgttcctgt acgagtggaa 240
caaattttcc aagcaggagt ccaaattctt tgtgcagttt gaaaagggat ctgaatattt 300
tcatctgcac acgcttgtgg agacctccgg catctcttcc atggtcctcg gccgctacgt 360
gagtcagatt cgcgcccagc tggtgaaagt ggtcttccag ggaattgaac cccagatcaa 420
cgactgggtc gccatcacca aggtaaagaa gggcggagcc aataagggtg tggattctgg 480
gtatattccc gcctacctgc tgccgaaggt ccaaccggag cttcagtggg cgtggacaaa 540
cctggacgag tataaattgg ccgccctgaa tctggaggag cgcaaaccgc tcgtcgcgca 600
gtttctggca gaatcctcgc agcgtcgcga ggaggcggct tcgcagcgtg agttctcggc 660
tgaccgggtc atcaaaagca agacttccca gaaatacatg gcgctcgtca actggctcgt 720
ggagcacggc atcacttccg agaagcagtg gatccaggaa aatcaggaga gctacctctc 780
cttcaactcc accggcaact ctcggagcca gatcaaggcc gcgctcgaca acgcgaccaa 840
aattatgagt ctgacaaaaa gcgcggtgga ctacctcgtg gggagctccg ttcccagga 900
catttcaaaa aacagaatct ggcaaathtt tgagatgaat ggctacgacc cggcctacgc 960
gggatccatc ctctacggct ggtgtcagcg ctcttcaac aagaggaaca ccgtctggct 1020
ctacggaccc gccacgaccg gcaagaccaa catcgcggag gccatcgccc acactgtgcc 1080
cttttacggc tgcgtgaact ggaccaatga aaactttccc tttaatgact gtgtggacaa 1140
aatgctcatt tgggtggagg agggaaagat gaccaacaag gtggttgaat ccgccaaggc 1200
catcctgggg ggctcaaagg tgcgggtcga tcagaaatgt aaatcctctg ttcaaattga 1260
ttctaccctt gtcattgtaa cttccaatac aaacatgtgt gtggtggtgg atgggaattc 1320
cacgaccttt gaacaccagc agccgctgga ggaccgcatg ttcaaatttg aactgactaa 1380
gcggctcccc ccagattttg gcaagattac taagcaggaa gtcaaggact tttttgcttg 1440
ggcaaaggtc aatcaggtgc cggtgactca cgagtttaa gttcccaggg aattggcggg 1500
aactaaaggg gcggagaaat ctctaaaacg cccactgggt gacgtcacca atactagcta 1560
taaaagtctg gagaagcggg ccaggctctc atttgttccc gagacgcctc gcagttcaga 1620
cgtgactggt gatcccgctc ctctgcgacc gctcaattgg aattcaagat tggttggaag 1680
aagttggtga 1690

<210> 16
<211> 145
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 16
ccatcaccaa ggtaaagaag ggcggagcca ataagggtgt ggattctggg tatattcccg 60
cctacctgct gccgaagtc caaccggagc tttagtgggc gtggacaaac ctggacgagt 120
ataaattggc cgccctgaat ctgga 145

<210> 17
<211> 174
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 17

00533427 032200

taagcaggaa gtcaaggact tttttgcttg ggcaaaggtc aatcagggtgc cggtgactca 60
 cgagtttaaa gttcccaggg aattggcggg aactaaaagg gcggagaaat ctctaaaacg 120
 cccactgggt gacgtcacca atactagcta taaaagtctg gagaagcggg ccag 174

<210> 18
 <211> 187
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 18
 cactctcaag caaggggggtt ttgtaagcag tgatgtcata atgatgtaat gcttattgtc 60
 acgcgatagt taatgattaa cagtcattgt atgtgtttta tccaatagga agaaagcgcg 120
 cgtatgagtt ctccgcgagac ttccggggta taaaagaccg agtgaacgag cccgccgcca 180
 ttctttg 187

<210> 19
 <211> 168
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 19
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 cccaaacgag ccagcgagcg agcgaacgag acagggggga gaggcca 168

<210> 20
 <211> 168
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 20
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 tcgtttgggg gggcgacggc cagagggccg tcgtctgccg gctctttgag ctgccacccc 120
 cccaaacgag ccagcgagcg agcgaacgag acagggggga gaggcca 168

<210> 21
 <211> 8
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 21
 cgggtgtga

<210> 22
 <211> 8
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 22
 cggttgag

8

<210> 23
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 23
 caaaacctcc ttgcttgaga g

21

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